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<213>Chlamydia pneumoniae
<400>6847
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1               5                   10                  15
Glu Glu Leu Gly Cys Gln Val Glu His Arg Lys Gln Gly Lys Ile Gln
                20                  25                  30
Lys Pro Leu His Tyr Ile Asn Ala Ile Gly Gly Ser Arg Ser Leu Thr
        35                  40                  45
Leu Thr Tyr Thr Cys Ser Ser Glu Val Val Leu Leu Pro Ile Thr Gly
    50                  55                  60
Arg Val Leu Gln Leu Arg Cys Thr Ser Leu Glu Asn Arg Met Tyr Lys
65                  70                  75                      80
Leu Gln Tyr Arg Ser Pro Leu Arg Asp Ser Pro Arg Asp Leu Glu Ser
                85                  90                  95
Val Val Gly Leu Val His Cys
                100
<210>6848
<211>88
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1               5                   10                  15
Arg Met Arg Ile Leu Ser Leu Ser Glu Arg Arg Phe Tyr Gly Lys Arg
            20                  25                  30
Glu Val Arg Ile Ile Leu Glu Thr Arg Glu Ile Leu Val Val Phe Glu
        35                  40                  45
Arg Cys Asn Cys Ile Leu Val Leu Leu Lys Lys Arg Leu Cys Asn Gln
    50                  55                  60
Pro Asn Lys Gly Thr Cys Ile Leu Val Cys Ile Leu Asn Ile Val Leu
65                  70                  75                      80
Phe Ser Val Gly Pro Ser Phe Trp
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<212>PRT
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<213>Chlamydia pneumoniae
<400>6849
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Met Asn Lys Leu Leu Asn Phe Val Ser Arg Thr Leu Gly Gly Asp Thr
 1               5                  10                  15
Ala Leu Asn Met Ile Asn Lys Ser Ser Asp Leu Ile Leu Ala Leu Trp
            20                  25                  30
Met Met Gly Val Val Leu Met Ile Ile Ile Pro Leu Pro Pro Pro Ile
        35                  40                  45
Val Asp Leu Met Ile Thr Ile Asn Leu Ser Ile Ser Val Phe Leu Leu
    50                  55                  60
Met Val Ala Leu Tyr Ile Pro Ser Ala Leu Gln Leu Ser Val Phe Pro
65                  70                  75                  80
Ser Leu Leu Leu Ile Thr Thr Met Phe Arg Leu Gly Ile Ile Phe Pro
                85                  90                  95
Leu Leu Asp Arg Phe Ser Leu Lys Arg Met Arg Val Met Ser Phe Arg
            100                 105                 110
Leu Arg Arg Leu Arg Gly Trp Arg Glu Leu Cys Gly Arg Val His Tyr
        115                 120                 125
Leu Pro His Tyr Tyr Asn His Ser Val Tyr Arg Ser Asn
        130                 135                 140
```

(51) International Patent Classification [6] :	A3	(11) International Publication Number:	**WO 99/27105**
C12N 15/31, 15/62, C07K 14/295, 16/12, 19/00, A01K 67/027, A61K 39/118, G01N 33/53, C12Q 1/68		(43) International Publication Date:	3 June 1999 (03.06.99)

(54) Title: *CHLAMYDIA PNEUMONIAE* GENOMIC SEQUENCE AND POLYPEPTIDES, FRAGMENTS THEREOF AND USES THEREOF, IN PARTICULAR FOR THE DIAGNOSIS, PREVENTION AND TREATMENT OF INFECTION

(57) Abstract

The subject of the invention is the genomic sequence and the nucleotide sequences encoding polypeptides of *Chlamydia pneumoniae*, such as cellular envelope polypeptides, which are secreted or specific, or which are involved in metabolism, in the replication process or in virulence, polypeptides encoded by such sequences, as well as vectors including the said sequences and cells or animals transformed with these vectors. The invention also relates to transcriptional gene products of the *Chlamydia pneumoniae* genome, such as, for example, antisense and ribozyme molecules, which can be used to control growth of the microorganism. The invention also relates to methods of detecting these nucleic acids or polypeptides and kits for diagnosing *Chlamydia pneumoniae* infection. The invention also relates to a method of selecting compounds capable of modulating bacterial infection and a method for the biosynthesis or biodegradation of molecules of interest using the said nucleotide sequences or the said polypeptides. The invention finally comprises, pharmaceutical, in particular vaccine, compositions for the prevention and/or treatment of bacterial, in particular *Chlamydia pneumoniae*, infections.

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INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6   C12N15/31   C12N15/62   C07K14/295   C07K16/12   C07K19/00

          A01K67/027   A61K39/118   G01N33/53   C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6   C07K   C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PEREZ MELGOSA M ET AL: "Isolation and characterization of a gene encoding a Chlamydia pneumoniae 76-kilodalton protein containing a species-specific epitope." INFECT IMMUN, MAR 1994, 62 (3) P880-6, XP002076845 UNITED STATES abstract page 880, right-hand column, paragraph 3 -page 881, left-hand column, paragraph 1 --- -/--	1-3,7,9, 11,13, 26,27, 30,44, 45,48

[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
3 June 1999	17. 09. 99

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Gurdjian, D

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	TOMB J -F ET AL: "THE COMPLETE GENOME SEQUENCE OF THE GASTRIC PATHOGEN HELICOBACTER PYLORI" NATURE, vol. 388, no. 6642, 7 August 1997 (1997-08-07), pages 539-547, TABEL, XP002062106 the whole document	1-3,7,9, 11,13, 26,27, 30,44, 45,48
A	KORNAK JM ET AL: "Sequence analysis of the gene encoding the Chlamydia pneumoniae DnaK protein homolog." INFECT IMMUN, FEB 1991, 59 (2) P721-5, XP002076846 UNITED STATES abstract page 724	1
A	WATSON MW ET AL: "The CrP operon of Chlamydia psittaci and Chlamydia pneumoniae." MICROBIOLOGY, OCT 1995, 141 (PT 10) P2489-97, XP002076847 ENGLAND abstract page 2942 -page 2943	1
A	LOBAU S ET AL: "Molecular cloning, sequence analysis, and functional characterization of the lipopolysaccharide biosynthetic gene kdtA encoding 3-deoxy-alpha-D-manno-octulosonic acid transferase of Chlamydia pneumoniae strain TW-183." MOL MICROBIOL, NOV 1995, 18 (3) P391-9, XP002076848 ENGLAND abstract	1
A	PETERSON EM ET AL: "Characterization of the murine antibody response to peptides representing the variable domains of the major outer membrane protein of Chlamydia pneumoniae." INFECT IMMUN, AUG 1996, 64 (8) P3354-9, XP002076849 UNITED STATES abstract	1
A	EP 0 784 059 A (HITACHI CHEMICAL CO LTD) 16 July 1997 (1997-07-16) claims 1-45	1

-/--

2

INTERNATIONAL SEARCH REPORT

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	"http://www.ncbi.nlm.nih.gov/cgi-bin/Entre z/framik?db=Genome&gi=140" KALMAN S. ET AL.,December 1998 (1998-12), XP002104860 page 1 -page 2 -----	1-3,7,9, 11,13

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INTERNATIONAL SEARCH REPORT

| Box I | Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet) |

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

   Remark: Although claims 40-43
   are directed to a method of treatment of the human/animal
   body, the search has been carried out and based on the alleged
   effects of the compound/composition.

2. [ ] Claims Nos.:
   because they relate to parts of the International Application that do not comply with the prescribed requirements to such
   an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

| Box II | Observations where unity of invention is lacking (Continuation of item 2 of first sheet) |

This International Searching Authority found multiple inventions in this international application. as follows:

   see additional sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all
   searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment
   of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report
   covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is
   restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

   claims 1-3 and 7,9,11,13,26,27,30,44,45,48 (partially)

Remark on Protest
[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (1)) (July 1998)

FURTHER INFORMATI N CONTINUED FR M   PCT/ISA/ 210

Invention 1 : claims 1-3 and 7,9,11,13,26,27,30,44,45,48 (partially)
           nucleotide seq.id.n.1 coding for the genome of
           Chlamydia pneumoniae, corresponding vector, host, method of
           dectection, DNA chip, screening assay and kit.

Invention 2 : claims 4-56 (partially)

           ORF2 of Chlamydia pneumoniae, fragments, corresponding
           polypeptides, nucleotide sequences, DNA chip, cloning
           vector, host, method for producing polypeptides, fusion poly-
           peptide, method for the detection, kit, antibody, immunogenic
           and pharmaceutical composition, screening assay.

Inventions 3-1297 : identical to invention 2, but applied to orf3-1297, in
           which invention 3 is limited to ORF3, invention 4 to ORF4, etc..
              until invention 1297 that is limited to ORF1297.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/.B 98/01890

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0784059	A	16-07-1997	AU	685680 B	22-01-1998
			AU	3532995 A	09-04-1996
			WO	9609320 A	28-03-1996
			JP	8143594 A	04-06-1996
			JP	9009974 A	14-01-1997
			JP	9009976 A	14-01-1997
			JP	9009999 A	14-01-1997
			JP	9015243 A	17-01-1997
			JP	9015244 A	17-01-1997